DISCUSSION OF THE AMENDMENT

Claim 17 has been amended by deleting the parenthetical expression and reinserting the substance thereof earlier in the claim. The scope of the claim has not been changed.

No new matter is believed to have been added by the above amendment. Claims 1-27 remain pending in the application.

REMARKS

Applicants thank the Examiner for the courtesy extended to Applicants' attorney and Applicants' assignee's representative during the interview held May 17, 2006, in the above-identified application. During the interview, Applicants' attorney explained the presently-claimed invention and why it is patentable over the applied prior art, and discussed other issues raised in the Office Action. The discussion is summarized and expanded upon below.

The present invention relates to an acrylic polymer powder suitable for an acrylic sol, an acrylic sol comprising the acrylic polymer powder and a plasticizer, and a molding obtained from the acrylic sol.

As described in the specification under "Statement of Related Art," beginning at page 1, line 12, acrylic sols are known in the prior art, but have been problematical, for reasons stated. The present invention addresses the problems of the prior art.

As recited in Claim 1, the present invention is an acrylic polymer powder obtained by coagulating and drying a latex containing acrylic polymer particles, in which acrylic polymer powder,

(i) the average particle size of the powder is 5 to 100μm,

(ii) the percentage of void is 70 % or less, and

(iii) the integral void volume on voids having a pore diameter of 1 μm or more is 0.9 mL/g or less.

All of the present claims require the limitations of said Claim 1.

Note that Claim 1 recites both an acrylic polymer powder and acrylic polymer particles. It should be understood that the particles are primary particles, as described in the specification at page 10, line 10, and the powder, which is formed by, *inter alia*, coagulating a latex containing the particles, comprises secondary particles, as described in the specification at page 6, line 19. As discussed below with regard to the rejections over prior

art, and as Applicants' attorney noted during the above-referenced interview, it appears that the Examiner may not have appreciated this distinction which, Applicants submit, is well-known in this art, as described for example in U.S. 5,521,252 (Matsuda et al), discussed in greater detail *infra*.

As detailed above with regard to Claim 1, the presently-claimed acrylic polymer powder must meet three conditions, as listed therein.

As Applicants' attorney pointed out during the above-referenced interview, the specification herein contains comparative data demonstrating the importance of these conditions, beginning at page 44, line 1. Various acrylic polymer particles were prepared, as described in Referential examples 1-13. Examples 1-24, and Comparative examples 1-13 were carried out using various acrylic polymer powders made from various acrylic polymer particles, as described therein. Measurement or evaluation of values of physical properties in the referential examples, examples and comparative examples were made according to methods described in the specification at page 44, line 6 through page 47, line 9. The data are shown in Tables 1-5, at pages 71-75 of the specification, respectively. A copy of Tables 1-5 is **submitted herewith**. Applicants describe the data in the specification at page 76 as follows:

> In the above examples and comparative examples, Comparative examples 1 to 9 correspond to Examples 1 to 9, respectively, Comparative examples 10 to 12 correspond to Examples 12 to 14, respectively, and Comparative example 13 corresponds to Example 20. Each comparative example does not satisfy the condition that the integral void volume on voids having a pore diameter of 1 μm or more is 0.9 mL/g or less on the acrylic polymer powder, which is an indispensable condition of embodiment 1 (percentage of void) and satisfied in the corresponding example, and many of these comparative examples do not satisfy the condition that the percentage of void is 70 % or less, either, which is another indispensable condition of embodiment 1 and satisfied in the corresponding examples (Table 4). As a result, in each of the examples, the fluidity and storage stability of the acrylic sol obtained are

> superior to those in the corresponding comparative example (Table 5).
>
> Examples 14 to 16 are in such a correlation that Example 14 only satisfies the condition of embodiment 1 (percentage of void), Example 15 only satisfies the conditions of embodiment 1 and embodiment 2 (particle size ratio), and Example 16 only satisfies the conditions of embodiment 1 and embodiment 3 (water soluble macromolecule). In Example 15, the fluidity of the acrylic sol obtained is heightened, compared with Example 14, and in Example 16, the particle destruction resistance of the acrylic sol obtained is heightened, compared with Example 14 (Table 5). Similar tendency is seen also in Examples 20 to 22. Namely, Examples 20 to 22 are in such a correlation that Example 20 only satisfies the condition of embodiment 1 (percentage of void), Example 21 only satisfies the conditions of embodiment 1 and embodiment 2 (particle size ratio), and Example 22 only satisfies the conditions of embodiment 1 and embodiment 3 (water soluble macromolecule). In Example 21, the fluidity of the acrylic sol obtained is heightened, compared with Example 20, and in Example 22, the particle destruction resistance of the acrylic sol obtained is heightened, compared with Example 20 (Table 5). In Examples 1 to 4, 6 to 12, 18, 19 and 24 where a reactive surfactant (embodiment 4) was used, the foaming properties of the sheets obtained are superior to those in Examples 5, 13 to 17 and 20 to 23 where a reactive surfactant was not used (Table 5).

None of the applied prior art disclose or suggest the presently-claimed invention, or the superior results obtained thereby.

The rejections of Claims 1, 12, 13, 18, 19, 23 and 24 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over, and of Claims 2-11, 17, 22 and 27 under 35 U.S.C. § 103(a) as unpatentable over, U.S. 5,453,458 (Takeuchi et al), are respectfully traversed.

Takeuchi et al discloses a particular core-shell polymer having a weight average particle size of 0.1-50 μm for use in a plastisol (column 3, lines 21-26), which polymer is produced by a multi-stage seed emulsion polymerization method or a suspension polymerization method wherein a latex having a weight average particle size usually in the range of 0.1-5 μm is produced, and the resultant polymer particles are separated by a freeze-

thaw or salting-out procedure, and are then centrifugally dehydrated and dried, thereby to provide a core-shell polymer in the form of a powder (column 7, lines 40-51).

The Examiner finds that Takeuchi et al's product appears to be the same as that claimed herein, and that the burden is shifted to Applicants to show otherwise and further, above-listed condition (ii) "may be construed as not having any voids at all."

In reply, and as discussed above, the Examiner fails to distinguish particle size from powder size. Takeuchi et al discloses and suggests nothing with regard to the particle diameter of their powder. In addition, powders of particles, i.e., secondary particles formed by coagulating primary particles, will necessarily have a void volume. Moreover, the above-discussed comparative data demonstrates that obtaining an acrylic polymer powder by coagulating and drying a latex containing acrylic polymer particles does not necessarily satisfy the presently-recited three conditions discussed above. Indeed, the above-discussed comparative examples, which involve such coagulating and drying but do not satisfy all three conditions, are actually closer to the presently-claimed invention than the centrifugal dehydration and drying disclosed by Takeuchi et al. Compare *Ex parte Humber*, 217 USPQ 265 (Bd. Pat. App. & Inter. 1981) (comparative data showing the claimed chlorine-containing compounds to be unexpected over various (non-prior art) chlorine-containing isomers was accepted as more probative over prior art, drawn to non-chlorine containing analogs of the claimed compounds, asserted to be closest.) In other words, there is no justification for the Examiner's finding that the presently-claimed powder appears to be the same as the powder of Takeuchi et al.

For all the above reasons, it is respectfully requested that these rejections be withdrawn.

The rejection of Claim 1 under 35 U.S.C. § 102(b) as anticipated by U.S. 4,892,932 (Rauch et al), is respectfully traversed.

Rauch et al discloses a method for spray drying polymer emulsions and solutions for the purposes of making spray dried polymer powders (column 1, lines 5-9). Rauch et al additionally discloses that aqueous polymer dispersions with high solids content are sensitive systems which tend to form deposits and coagulates at elevated temperatures or under the influence of shearing forces (column 1, lines 21-25), and that the problem to be solved by their invention is to avoid such difficulties (column 1, lines 38-39). Rauch et al discloses an average particle size of about 50 μm for the powder grains of their spray dried polymer powder (column 3, lines 35-37), but nothing regarding percentage of void or integral void volume on voids having a pore diameter of 1 μm or more. Thus, like the above discussion regarding the rejections over Takeuchi et al, the comparative data of record demonstrates that obtaining an acrylic polymer powder by coagulating and drying a latex containing acrylic polymer particles does not necessarily satisfy the presently-recited three conditions discussed above. Particularly pertinent is a comparison of Example 14 with Comparative example 12, and of Example 20 with Comparative example 13. Examples 14 and 20 satisfy all three conditions, while Comparative examples 12 and 13 satisfy the average particle size condition (condition (i)), but neither conditions (ii) or (iii), as shown in Table 4. Table 5 shows that, *inter alia*, fluidity and storage stability are inferior compared to the corresponding Examples.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejections under 35 U.S.C. § 103(a) of Claims 1, 3, 5, 7, 9 and 11-13 over Matsuda et al alone, and of Claims 14-16, 20, 21, 25 and 26 as unpatentable over Matsuda et al in view of U.S. 6,632,531 (Blankenship), are respectfully traversed.

Matsuda et al discloses an acrylic multilayer polymer powder which is a coagulated powder of an emulsified latex of an acrylic multilayer polymer, which coagulated powder after drying comprises (1) not more than 40 wt % of a fine powder having a particle size of 212 μm or less, and (2) the volume of voids having a pore diameter of 5 μm or less in the

coagulated powder measured by a mercury pressure method is not more than 0.7 cc per dry unit weight (paragraph bridging columns 1 and 2), i.e., not more than 0.7 cc/g (Table 1 at columns 13-14). Matsuda et al discloses for (1) that "[l]ow water content is not the only property of coagulated powder which allows efficient drying with a press dehydration extruder, but a large average size of the coagulated powder and a low fine powder content are also effective. Specifically, the coagulated powder should have the above-mentioned gap structure after drying, with not more than 40 wt % of fine powder with a size of 212 μm and smaller. **Coagulated powder with more than 40 wt % of fine powder with a size of 212 μm and less after drying causes considerable retention of the removed water in the pressuring section when large amounts of the coagulated powder are fed, tending to produce the phenomenon of surging**" (column 6, lines 27-41; emphasis added). As shown in Table 1 (columns 13-14), the Examples of Matsuda et al's invention wherein the fine powder with a size of 212 μm or less is not more than 40 wt % show an average particle size of ranging from 300 to 480 μm; an average particle size of 180 μm in Comparative Example 3 therein was unacceptable.

The Examiner finds that the difference between Matsuda et al and the present invention is that Matsuda et al "teaches a broader particle size than that" recited herein.

In reply, however one skilled in the art would construe Matsuda et al's disclosure of particle size, Matsuda et al actually teaches away from the presently-recited particle size range, as emphasized above. Indeed, taken to its logical conclusion, Matsuda et al suggests that powders of particle size of 212 μm and less are undesirable. Nor does Matsuda et al disclose or suggest above-discussed condition (ii). Furthermore, while Matsuda et al discloses a void volume having a particular maximum per unit weight (0.7 cc/g), it is with regard to voids having a pore diameter of **5 μm or less**, as discussed above, rather than presently-recited condition (iii), which relates to voids having a pore diameter of **1 μm or**

more, which is thus different and not necessarily overlapping with Matsuda et al. Finally, while Matsuda et al does not provide a *prima facie* case of obviousness, the above-discussed comparative data herein provides additional evidence of patentability.

Blakenship is being relied on for its disclosure of macromolecules and reactive surfactants, although there does not appear to be disclosure therein regarding reactive surfactants. Nevertheless, Blakenship does not remedy the fundamental deficiencies of Matsuda et al, as discussed above.

For all the above reasons, it is respectfully requested that these rejections be withdrawn.

The objection to Claim 17 is now moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that the objection be withdrawn.

All of the presently-pending claims in this application are believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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Table 1

	Acrylic polymer particles	Average particle size (μm)	First stage polymerization Monomer mixture Use amount (parts by mass) Composition (ratio by mass)	Second stage polymerization Monomer mixture Use amount (parts by mass) Composition (ratio by mass)	Third stage polymerization Monomer mixture Use amount (parts by mass) Composition (ratio by mass)	Fourth stage polymerization Monomer mixture Use amount (parts by mass) Composition (ratio by mass)
Ref. exam. 1	(I −1)	0. 80	MMA/iBMA 90(5/95)	MMA/iBMA/MAA/KH05 630(39/60/0. 5/0. 5)	MMA/iBMA/MAA/KH05 360(58. 5/40/0. 5/1)	MMA/iBMA/MAA/2HEMA/KH05 720(64/30/2. 5/2. 5/1)
Ref. exam. 2	(I −2)	0. 81	MMA/iBMA 90(5/95)	MMA/iBMA/MAA/KH05 630(39/60/0. 5/0. 5)	MMA/iBMA/MAA/KH05 360(43. 5/55/0. 5/1)	MMA/iBMA/MAA/2HEMA/KH05 720(48. 5/45. 5/2. 5/2. 5/1)
Ref. exam. 3	(I −3)	0. 77	MMA/iBMA 90(5/95)	MMA/iBMA/MAA/3NEX 630(39/60/0. 5/0. 5)	MMA/iBMA/MAA/3NEX 360(58. 5/40/0. 5/1)	MMA/iBMA/MAA/2HEMA/3NEX 720(64/30/2. 5/2. 5/1)
Ref. exam. 4	(I −4)	0. 77	MMA/iBMA 90(5/95)	MMA/iBMA/MAA/KH05 630(39/60/0. 5/0. 5)	MMA/iBMA/MAA/KH05 360(58. 5/40/0. 5/1)	MMA/iBMA/MAA/2HEMA/3NEX 720(64/30/2. 5/2. 5/1)
Ref. exam. 5	(I −5)	0. 79	MMA/iBMA 90(5/95)	MMA/iBMA/MAA/3NEX 630(39/60/0. 5/0. 5)	MMA/iBMA/MAA/3NEX 360(43. 5/55/0. 5/1)	MMA/iBMA/MAA/2HEMA/3NEX 720(48. 5/45. 5/2. 5/2. 5/1)
Ref. exam. 6	(I −6)	0. 79	MMA/iBMA 90(5/95)	MMA/iBMA/MAA/3NEX 630(39/60/0. 5/0. 5)	MMA/iBMA/MAA/3NEX 360(43. 5/55/0. 5/1)	MMA/iBMA/MAA/2HEMA/KH05 720(48. 5/45. 5/2. 5/2. 5/1)
Ref. exam. 7	(I I −1)	0. 67	MMA/BA/PEG9G/ALMA 360(30/69. 9/0. 05/0. 05)	MMA/iBMA/MAA/HS10 1440(93. 5/5/1/0. 5)		
Ref. exam. 8	(I I −2)	0. 42	MMA/BA/PEG9G/ALMA 270(30/69. 7/0. 2/0. 1)	MMA/CHMA/MAA/HS10 1530(92. 5/5/2/0. 5)		
Ref. exam. 9	(I I −3)	0. 32	MMA/BA/PEG9G 180(20/79. 5/0. 5)	MMA/HS10 1620(99. 5/0. 5)		
Ref. exam. 10	(I I −4)	0. 20	MMA/BA/PEG9G/ALMA 900(30/68. 9/1/0. 1)	MMA/BA/PEG9G/HS10 900(40/58. 5/1/0. 5)		
Ref. exam. 11	(I I −5)	0. 68	MMA/BA/PEG9G/ALMA 360(30/69. 9/0. 05/0. 05)	MMA/iBMA/MAA/HS10 1440(45/53. 5/1/0. 5)		
Ref. exam. 12	(I I −6)	0. 69	MMA/BA/PEG9G/ALMA 360(30/69. 9/0. 05/0. 05)	MMA/iBMA/MAA/130K 1440(93. 5/5/1/0. 5)		
Ref. exam. 13	(I I −7)	0. 70	MMA/BA/PEG9G/ALMA 360(30/69. 9/0. 05/0. 05)	MMA/iBMA/MAA/130K 1440(45/53. 5/1/0. 5)		

Ref. exam. : Referential example

Table 2

	Acrylic polymer particles in latex 100 parts by mass	Surface tension-adjusting agent* (parts by mass)		Water soluble macromolecule (parts by mass)		Reactive surfactant
Exam. 1	(I −1)	Na-DBS	2	Na-PAcA	0. 2	KH05
Exam. 2	(I −1)	−	−	Na-PStS	0. 2	KH05
Exam. 3	(I −1)	Na-AS	1	−	−	KH05
Exam. 4	(I −2)	CS141E	3	Na-PStS	0. 2	KH05
Exam. 5	(I −3)	K-POEAEP	1	Na-PAcA	0. 5	−
Exam. 6	(I −4)	Na-DBS	2	Na-PStS	1	KH05
Exam. 7	(I I −1)	CS141E	2	Na-PAcA	0. 2	HS10
Exam. 8	(I I −1)	−	−	Na-PAcA	0. 2	HS10
Exam. 9	(I I −1)	CS141E	2	−	−	HS10
Exam. 10	(I I −1) ／(I I −2) ／(I I −3) =6／2／2	CS141E	2	Na-PAcA	0. 2	HS10 in all
Exam. 11	(I −1)／(I I −4) =7／3	K-POEAEP	2	Na-PStS	0. 2	KH05／HS10
Exam. 12	(I I −5)	Na-AS	2	Na-PStS	0. 2	HS10
Exam. 13	(I I −6)	CS141E	2	Na-PAcA	0. 2	−
Exam. 14	(I −5)	−	−	−	−	−
Exam. 15	(I −5)	Na-DBS	2	−	−	−
Exam. 16	(I −5)	−	−	Na-PAcA	0. 2	−
Exam. 17	(I −3)	−	−	−	−	−
Exam. 18	(I −2)	−	−	−	−	KH05
Exam. 19	(I −6)	−	−	−	−	KH05
Exam. 20	(I I −7)	−	−	−	−	−
Exam. 21	(I I −7)	CS141E	2	−	−	−
Exam. 22	(I I −7)	−	−	Na-PStS	0. 2	−
Exam. 23	(I I −6)	−	−	−	−	−
Exam. 24	(I I −5)	−	−	−	−	HS10
C.exam. 1	(I −1)	Na-DBS	2	Na-PAcA	0. 2	KH05
C.exam. 2	(I −1)	−	−	Na-PStS	0. 2	KH05
C.exam. 3	(I −1)	Na-AS	1	−	−	KH05
C.exam. 4	(I −2)	CS141E	3	Na-PStS	0. 2	KH05
C.exam. 5	(I −3)	K-POEAEP	1	Na-PAcA	0. 5	−
C.exam. 6	(I −4)	Na-DBS	2	Na-PStS	1	KH05
C.exam. 7	(I I −1)	CS141E	2	Na-PAcA	0. 2	HS10
C.exam. 8	(I I −1)	−	−	Na-PAcA	0. 2	HS10
C.exam. 9	(I I −1)	CS141E	2	−	−	HS10
C.exam. 10	(I I −5)	Na-AS	2	Na-PStS	0. 2	HS10
C.exam. 11	(I I −6)	CS141E	2	Na-PAcA	0. 2	−
C.exam. 12	(I −5)	−	−	−	−	−
C.exam. 13	(I I −7)	−	−	−	−	−

* as the effective component

[Abbreviations]

Na-DBS : Sodium dodecylbenzenesulfonate
Na-AS : Sodium alkylsulfonate (LATEMUL PS)
CS141E : Aromatic phosphate ester (ADEKA COL CS141E)
K-POEAEP : Potassium salt of polyoxyethylene alkyl ether phosphate (ELEC F)
Na-PAcA : Sodium polyacrylate
Na-PStS : Sodium polystyrenesulfonate
KH05 : Ammonium salt of polyoxyethylene 1-(allyloxymethyl)alkyl ether sulfate ester
HS10 : Ammonium salt of nonyl(propenyl)phenol ethylene oxide 10 mols-adduct sulfate ester
Exam. : Example   C.exam. : Comparative example

Table 3

	Latex				Acrylic polymer powder				
	Surface tention μN/cm	Latex condition C	Spray drying condition D	C×D	Macropore Diameter (μm)	Macropore Pore volume A (mL/g)	Micropore Diameter (μm)	Micropore Pore volume B (mL/g)	A/B
Exam. 1	376	0.11	1.8	0.19	3.1	0.12	0.30	0.13	0.92
Exam. 2	553	0.11	1.6	0.16	3.5	0.13	0.28	0.15	0.86
Exam. 3	385	0.11	2.0	0.21	3.4	0.13	0.25	0.14	0.88
Exam. 4	355	0.11	2.1	0.23	4.6	0.14	0.15	0.16	0.88
Exam. 5	405	0.12	1.5	0.18	4.2	0.12	0.25	0.14	0.86
Exam. 6	367	0.11	2.2	0.25	4.8	0.12	0.27	0.15	0.80
Exam. 7	370	0.11	3.0	0.40	3.8	0.12	0.21	0.16	0.75
Exam. 8	543	0.11	4.3	0.48	3.6	0.11	0.29	0.16	0.88
Exam. 9	370	0.11	2.7	0.30	3.7	0.14	0.21	0.14	1.0
Exam. 10	363	0.14	2.3	0.31	3.9	0.13	0.19	0.092	1.4
Exam. 11	389	0.17	2.0	0.35	3.9	0.13	0.19	0.10	1.3
Exam. 12	373	0.11	2.4	0.25	3.6	0.11	0.28	0.16	0.69
Exam. 13	357	0.12	2.6	0.30	3.8	0.11	0.30	0.16	0.69
Exam. 14	562	0.12	2.2	0.26	4.7	0.15	0.18	0.17	0.88
Exam. 15	371	0.12	1.9	0.23	4.2	0.13	0.17	0.18	0.72
Exam. 16	557	0.12	2.0	0.24	4.5	0.13	0.20	0.26	0.81
Exam. 17	566	0.12	1.7	0.20	4.0	0.16	0.22	0.19	0.84
Exam. 18	560	0.11	2.3	0.25	4.1	0.17	0.18	0.17	1.0
Exam. 19	558	0.10	2.4	0.26	4.6	0.15	0.21	0.18	0.83
Exam. 20	559	0.11	4.0	0.44	4.2	0.14	0.25	0.20	0.70
Exam. 21	366	0.11	3.3	0.37	4.0	0.15	0.21	0.19	0.79
Exam. 22	555	0.11	3.0	0.33	4.1	0.16	0.20	0.17	0.94
Exam. 23	575	0.12	2.6	0.31	3.8	0.13	0.29	0.19	0.68
Exam. 24	555	0.11	3.5	0.38	3.9	0.15	0.30	0.15	1.00
C.exam. 1	376	0.053	8.1	0.43	5.3	0.18	0.56	0.21	0.86
C.exam. 2	553	0.053	7.0	0.37	4.7	0.16	0.59	0.22	0.73
C.exam. 3	385	0.053	9.8	0.65	5.6	0.16	0.60	0.20	0.80
C.exam. 4	355	0.11	12.2	1.33	8.9	0.14	0.23	0.19	0.74
C.exam. 5	405	0.12	14.6	1.81	9.2	0.13	0.31	0.18	0.72
C.exam. 6	367	0.11	10.7	1.20	9.0	0.18	0.27	0.20	0.90
C.exam. 7	370	0.057	15.8	0.89	10.8	0.13	0.57	0.25	0.52
C.exam. 8	543	0.057	1.6	0.088	4.5	0.17	0.55	0.41	0.36
C.exam. 9	370	0.057	1.7	0.094	3.1	0.18	0.54	0.43	0.35
C.exam.10	373	0.057	21.0	1.19	12.2	0.19	0.049	0.31	0.61
C.exam.11	357	0.057	14.0	0.79	10.0	0.17	0.048	0.21	0.81
C.exam.12	562	0.058	9.8	0.57	7.2	0.20	0.61	0.28	0.71
C.exam.13	559	0.057	21.0	1.20	12.1	0.18	0.59	0.32	0.56

Table 4

	Acrylic polymer particles in latex	Acrylic sol							
		Acrylic polymer powder						Plasticizer (parts by mass)	
			Particle size*1 (μm)	Integral void volume*2 (mL/g)	Percentage of void (%)	Particle size ratio a/b		DINP	RDP
Exam. 1	(I−1)	(A−1)	30	0. 75	58	1. 2	○	100	
Exam. 2	(I−1)	(A−2)	34	0. 78	60	2. 1	×	100	
Exam. 3	(I−1)	(A−3)	27	0. 77	59	1. 2	○	100	
Exam. 4	(I−2)	(A−4)	24	0. 73	58	1. 1	○	100	
Exam. 5	(I−3)	(A−5)	28	0. 79	57	1. 5	△	100	
Exam. 6	(I−4)	(A−6)	26	0. 77	62	1. 2	○	100	
Exam. 7	(II−1)	(A−7)	20	0. 72	63	1. 2	○		120
Exam. 8	(II−1)	(A−8)	15	0. 74	65	2. 0	×		120
Exam. 9	(II−1)	(A−9)	18	0. 71	60	1. 2	○		120
Exam. 10	(II−1)/(II−2)/(II−3) =6/2/2	(A−10)	21	0. 70	55	1. 1	○		120
Exam. 11	(I−1)/(II−4)=7/3	(A−11)	32	0. 71	56	1. 1	○	100	
Exam. 12	(II−5)	(A−12)	23	0. 73	64	2. 2	×		120
Exam. 13	(II−6)	(A−13)	21	0. 75	62	1. 3	△		120
Exam. 14	(I−5)	(A−14)	23	0. 80	64	2. 2	×	100	
Exam. 15	(I−5)	(A−15)	27	0. 76	62	1. 2	○	100	
Exam. 16	(I−5)	(A−16)	25	0. 77	61	2. 2	×	100	
Exam. 17	(I−3)	(A−17)	24	0. 81	59	2. 1	×	100	
Exam. 18	(I−2)	(A−18)	22	0. 78	61	2. 2	×	100	
Exam. 19	(I−6)	(A−19)	21	0. 82	63	2. 1	×	100	
Exam. 20	(II−7)	(A−20)	15	0. 75	65	2. 0	×		120
Exam. 21	(II−7)	(A−21)	18	0. 72	64	1. 2	○		120
Exam. 22	(II−7)	(A−22)	20	0. 74	62	2. 0	×		120
Exam. 23	(II−6)	(A−23)	19	0. 79	67	2. 1	×		120
Exam. 24	(II−5)	(A−24)	17	0. 80	65	2. 0	×		120
C.exam. 1	(I−1)	(A−25)	12	1. 0	72	2. 3	×	100	
C.exam. 2	(I−1)	(A−26)	14	0. 95	73	3. 2	×	100	
C.exam. 3	(I−1)	(A−27)	10	0. 97	75	2. 3	×	100	
C.exam. 4	(I−2)	(A−28)	6	0. 92	78	2. 1	×	100	
C.exam. 5	(I−3)	(A−29)	6	0. 93	79	2. 9	×	100	
C.exam. 6	(I−4)	(A−30)	7	0. 98	79	2. 4	×	100	
C.exam. 7	(II−1)	(A−31)	8	1. 1	68	2. 5	×		120
C.exam. 8	(II−1)	(A−32)	32	0. 91	67	3. 1	×		120
C.exam. 9	(II−1)	(A−33)	30	0. 92	72	2. 4	×		120
C.exam.10	(II−5)	(A−34)	6	1. 3	78	2. 4	×		120
C.exam.11	(II−6)	(A−35)	9	1. 2	81	2. 2	×		120
C.exam.12	(I−5)	(A−36)	10	1. 1	79	3. 5	×	100	
C.exam.13	(II−7)	(A−37)	6	1. 3	75	3. 3	×		120

*1 Average particle size *2 Integral void volume on voids having a pore diameter of 1 μm or more

Table 5

	Acrylic sol									Sheet formed from acrylic sol				
	Particle destruction resistance			Fluidity			Storage stability			Bleed-out resistance	Hardness	Tensile strength (MPa)	Tensile elongation (%)	Foaming properties
	V1 (mPa·s)	V2 (mPa·s)	V2/V1	V1 (mPa·s)	V3 (mPa·s)	V3/V1	V1 (mPa·s)	V4 (mPa·s)	V4/V1					
Exam. 1	7500	7500	○	7500	7500	○	7500	7500	○	○	52	3.6	281	○
Exam. 2	10000	11250	○	10000	25000	△	10000	11250	○	○	54	3.7	273	○
Exam. 3	8750	20000	△	8750	9000	○	8750	8750	○	○	52	3.7	289	○
Exam. 4	10000	11250	○	10000	11000	○	10000	22500	△	○	45	3.0	303	○
Exam. 5	10000	11250	○	10000	12500	○	10000	25000	△	○	51	3.5	275	△
Exam. 6	8750	8750	○	8750	10000	○	8750	18750	△	○	53	3.6	270	○
Exam. 7	20000	20000	○	20000	21500	○	20000	20000	○	○	67	7.2	220	○
Exam. 8	25000	25000	○	25000	52000	○	25000	27500	○	○	69	7.3	212	○
Exam. 9	21250	45000	△	21250	23000	○	21250	22500	○	○	66	7.0	231	○
Exam. 10	17500	17500	○	17500	19000	○	17500	17500	○	○	68	7.6	205	○
Exam. 11	10000	10000	○	10000	14000	○	10000	12500	○	○	47	2.8	271	○
Exam. 12	22500	25000	○	22500	28000	○	22500	51250	△	○	61	5.9	265	○
Exam. 13	22500	25000	○	22500	25000	○	22500	46250	△	○	68	7.1	223	△
Exam. 14	17500	40000	△	17500	57500	△	17500	45000	△	○	43	3.2	310	△
Exam. 15	16250	37500	△	16250	25000	○	16250	40000	△	○	42	3.1	315	△
Exam. 16	16250	17500	○	16250	42500	△	16250	42500	△	○	45	3.0	292	△
Exam. 17	15000	32500	△	15000	37500	△	15000	35000	△	○	49	3.3	263	△
Exam. 18	16250	35000	△	16250	40000	△	16250	30000	○	○	42	3.2	305	○
Exam. 19	17500	38750	△	17500	55000	△	17500	40000	△	○	42	3.1	300	○
Exam. 20	30000	80000	△	30000	91250	△	30000	77500	△	○	64	7.0	215	△
Exam. 21	26250	70000	△	26250	45000	○	26250	65000	△	○	62	6.9	221	△
Exam. 22	27500	35000	○	27500	80000	△	27500	70000	△	○	66	7.1	209	△
Exam. 23	27500	75000	△	27500	85000	△	27500	75000	△	○	65	6.7	215	△
Exam. 24	28750	78750	△	28750	90000	△	28750	52500	○	○	65	6.9	222	○
C.exam. 1	11250	17500	○	11250	47000	×	11250	50000	×	○	51	3.5	278	○
C.exam. 2	13750	20000	○	13750	89000	×	13750	75000	×	○	53	3.7	262	○
C.exam. 3	12500	61250	×	12500	52000	×	12500	56250	×	○	52	3.5	273	○
C.exam. 4	13750	22500	○	13750	67500	×	13750	solidified	×	○	44	2.9	296	○
C.exam. 5	13750	21250	○	13750	62000	×	13750	solidified	×	○	51	3.4	270	×
C.exam. 6	12500	20000	○	12500	53000	×	12500	51250	×	○	52	3.5	269	○
C.exam. 7	30000	37500	○	30000	148000	×	30000	125000	×	○	68	7.0	215	○
C.exam. 8	40000	52500	○	40000	222000	×	40000	187500	×	○	69	7.2	210	○
C.exam. 9	37500	187500	×	37500	187000	×	37500	162500	×	○	67	7.3	218	○
C.exam.10	32500	42500	○	32500	156000	×	32500	solidified	×	○	60	5.8	260	○
C.exam.11	35000	46250	○	35000	146000	×	35000	solidified	×	○	68	7.0	212	×
C.exam.12	25000	80000	×	25000	120000	×	25000	solidified	×	○	42	3.0	300	×
C.exam.13	52000	205000	×	52000	260000	×	52000	solidified	×	○	63	6.8	210	×